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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/649,160	08/28/2000	Ed A. Schrock	3084.5US(96-1050.5)	6838

7590 10/08/2003

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EXAMINER

KESHAVAN, BELUR V

ART UNIT	PAPER NUMBER
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2825

DATE MAILED: 10/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/649,160

Applicant(s)

SCHROCK, ED A.

Examiner

Belur V Keshavan

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 February 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 3-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 August 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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## **DETAILED ACTION**

### ***Status Of Claims***

Applicant has cancelled claim 2 and amended claim 1.

Claims 1, 3-8 are in the application.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 4, 6, 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen (US Patent 5,155,066).

Regarding claim 1, Nguyen teaches in column 3-4 a method of attaching a semiconductor die to a lead frame comprising: providing a source of snap curing adhesive (rapidly curable adhesive); providing a source of lead frames; each lead frame having an attaching surface; providing a source of semiconductor die having an active surface; applying the snap curing adhesive to a portion of one of the lead frame; and contacting the active surface of one of the semiconductor die with the portions of one of the lead frames having the snap curable adhesive thereon. Nguyen lacks heating at least one of the semiconductor die and contacting the active surface of the die with the portions of one of the lead frames having snap curable adhesive thereon. Nguyen teaches heating the assembly of a semiconductor die contacting the snap curable adhesive on a lead frame to effect curing of the adhesive thereby heating the semiconductor die. However, the applicant has not specifically disclosed heating a die before

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contacting the snap curable adhesive on a lead frame solves any stated problem or is for any particular reason except that the heat effects the curing of the snap curable commercially available 505 epoxy adhesive. It would have been obvious to one of ordinary skill in the art to heat the semiconductor die to effect the curing of the snap curable commercially available 505 epoxy adhesive as all that is necessary is to cure the snap curing adhesive with the semiconductor die on the adhesive, which is thereon a lead frame.

As to the claim 3, in the applicant's specification, on page16, lines 15-17, the applicant describes commercially available snap curing 505 epoxy with a curing time of less than 1 second. It would have been obvious to one of ordinary skill in the art at the time of invention to use the teachings of Nguyen and use the commercially available snap curing 505 epoxy to bond semiconductor dice to lead frames to increase the production rate of bonded semiconductor dice.

As to the claim 4, Nguyen teaches in column 7, lines 41-42, that the snap curable adhesive has a cure time of substantially one minute or less.

As to the claim 6 and 8, the applicant has not disclosed that the application of snap curable adhesive to a portion of the active surface of one of the semiconductor die in a predetermined pattern solves any stated problem or is for any particular purpose and therefore it appears that the invention would perform equally well with the application of adhesive to one of the lead frames. It would have obvious to one of ordinary skill in the art to apply the adhesive to the semiconductor die in a predetermined pattern as all that is necessary is the die be adhered to the lead frame.

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Regarding claim 7, Nguyen disclose in column 7, lines 41-42 that the snap curable adhesive has a cure time of substantially one minute or less which includes a time of one second or less.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen in view of Evers (US Patent No. 5,810,926) or Japan'156 (Derwent acc number 1995-002639).

Nguyen discloses the application of an adhesive to the frame or device so as to bond die to the lead frame. However, the manner of application of the adhesive by rollers is not clearly taught in Nguyen. It is notoriously well known to one of ordinary skill in the art of which the examiner takes Official Notice to use a roller to apply die-bonding adhesives to the die or lead frame. In support of this assertion, the examiner cites Evers in column 2, lines 58-65, which discloses that die bonding adhesives are typically applied by "rolling on". Additionally, an adhesive is applied to the frame of Japan'156 via a roller. Therefore, it would have been obvious to one of ordinary skill in the art to use a roller to apply the adhesive as this is and was one of a host of equivalent manners of applications.

## **REMARKS**

### ***Response To Arguments***

Applicant's arguments filed on September 3, 2003 have been fully considered but they are not persuasive.

The examiner has noted that the claim 1 has been amended and the claim 2 has been cancelled.

Regarding amended independent claim 1, the examiner notes that the applicant's argument that Nguyen does not describe heating a semiconductor die, then contacting the heated

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die with a lead frame. However, the applicant has not specifically disclosed heating a die before contacting the snap curable adhesive on a lead frame solves any stated problem or is for any particular reason except that the heat effects the curing of the snap curable commercially available 505 epoxy adhesive. It would have been obvious to one of ordinary skill in the art to heat the semiconductor die to effect the curing of the snap curable (commercially available 505 epoxy) adhesive as all that is necessary is to cure the snap curing adhesive with the semiconductor die on the adhesive, which is thereon a lead frame.

Regarding independent claim 6, the examiner notes that the applicant's argument that Nguyen fails to teach applying snap curable adhesive to portions of the active surface of one of the semiconductor die. However the applicant has not disclosed that the application of snap curable adhesive to portions of the active surface of one of the semiconductor die solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with the application of adhesive to one of the lead frames as all that is necessary is the die be adhered to the lead frame.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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
CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

***Contact Information***

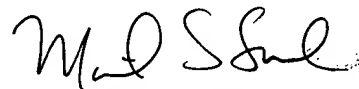
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Belur V Keshavan whose telephone number is 703 306 5985. The examiner can normally be reached on 8-4:30 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on 703 308 1323. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0956.

Bvk.   
September 30, 2003.

Belur V. Keshavan  
Examiner. Art Unit 2825.



MATTHEW SMITH  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800